

RAW SEQUENCE LISTING

**The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.**

Application Serial Number: _____

08/434,105

Source: _____

IFW16

Date Processed by STIC: _____

10/27/2006

ENTERED



IFW16

RAW SEQUENCE LISTING

DATE: 10/27/2006

PATENT APPLICATION: US/08/434,105

TIME: 10:10:14

Input Set : A:\41785.txt

Output Set: N:\CRF4\10272006\H434105.raw

3 <110> APPLICANT: Fischhoff, et al.
 5 <120> TITLE OF INVENTION: SYNTHETIC PLANT GENES AND METHOD FOR PREPARATION
 7 <130> FILE REFERENCE: 28079/41785
 9 <140> CURRENT APPLICATION NUMBER: US 08/434,105
 10 <141> CURRENT FILING DATE: 1995-05-03
 12 <150> PRIOR APPLICATION NUMBER: US 07/959,506
 13 <151> PRIOR FILING DATE: 1992-10-09
 15 <150> PRIOR APPLICATION NUMBER: US 07/476,661
 16 <151> PRIOR FILING DATE: 1990-02-12
 18 <150> PRIOR APPLICATION NUMBER: US 07/315,355
 19 <151> PRIOR FILING DATE: 1989-02-24
 21 <160> NUMBER OF SEQ ID NOS: 40
 23 <170> SOFTWARE: PatentIn version 3.3
 25 <210> SEQ ID NO: 1
 26 <211> LENGTH: 1743
 27 <212> TYPE: DNA
 28 <213> ORGANISM: Artificial sequence
 30 <220> FEATURE:
 31 <223> OTHER INFORMATION: Synthetic nucleotide sequence encoding Btk HD-1 insecticidal
 protein
 32 (cry1Ab), described in Example 1, and set forth in the lower line of
 33 Figure 2
 35 <400> SEQUENCE: 1
 36 atggctatag aaactgggta caccccaatc gatatttcct tgtcgctaac gcaatttctt 60
 38 ttgagtgaat ttgttcccg tgcgtgattt gtgtaggac tagttgatat tatctgggga 120
 40 atttttgggtc cctctcaatg ggacgcattt cttgtacaaa ttgaacagct catcaaccag 180
 42 agaatcgaag agttcgctag gaatcaagcc atttctagat tagaaggact aagcaatctt 240
 44 tatcaaattt acgcagaatc ttttagagag tgggaagcag atcctactaa tccagcatta 300
 46 agagaagaga tgcgtattca attcaatgac atgaacagtg cccttacaac cgctattcct 360
 48 ctttttgtag ttcaaaatta tcaagttcct ctctctccg tgtacgttca agctgccaac 420
 50 ctccacctct cagttttgag agatgtttca gtgtttggac aaagggtggg atttgatgcc 480
 52 gcgactatca atagtcgtta taatgattta actaggctta ttggcaacta tacagatcat 540
 54 gctgtacgct ggtacaatac gggattagag cgtgtatggg gaccggattc tagagattgg 600
 56 atcaggtaca accagttcag aagagagctt aactaactg tattagatat cgtttctcta 660
 58 tttccgaact atgatagtag aacgtatcca attcgaacag tttcccaatt aacaagagaa 720
 60 atttatacaa acccagtatt agaaaatttt gatggtagtt ttcgaggctc ggctcagggc 780
 62 atagaaggaa gtattaggag tccacatttg atggatatac ttaatagtat aaccatctat 840
 64 acggatgctc atagaggaga atactactgg tccggtcacc agatcatggc ttctcctgta 900
 66 ggggttttcg ggccagaatt cacttttccg ctatatggaa ctatgggaaa tgcagctcca 960
 68 caacaacgta ttgttgctca actaggctcag ggcgtgtata gaacattatc gtccacctta 1020
 70 tatagaagac cttttaacat cgggatcaac aaccaacaac tatctgttct tgacgggaca 1080
 72 gaatttgctt atggaacctc ctcaaatttg ccatccgctg tatacagaaa aagcggaacg 1140
 74 gtagattcgc tggatgaaat accgccacag aataacaacg tgccacctag gcaaggattt 1200
 76 agtcatcgat taagccatgt ttcaatgttt cgttcaggct ttagtaatat tagtgtaagt 1260

RAW SEQUENCE LISTING

DATE: 10/27/2006

PATENT APPLICATION: US/08/434,105

TIME: 10:10:14

Input Set : A:\41785.txt

Output Set: N:\CRF4\10272006\H434105.raw

```

78 ataataagag ctctatggtt ctcttgata catcgtagt ctgagttcaa caacatcatc 1320
80 ccttcatcac aaatcaccca aatcccactc accaagtcta ctaatcttgg ctctggaact 1380
82 tctgtcgta aaggaccagg atttacagga ggagatattc ttcgaagaac ttcacctggc 1440
84 cagatttcaa ccttaagagt aaatattact gcaccattat cacaaagata tcgggtaaga 1500
86 attcgctacg cttctaccac aaaccttcag ttccacacat caattgacgg aagacctatt 1560
88 aatcagggga atttttcagc aactatgagt agtgggagta atttacagtc cggaagcttt 1620
90 aggactgtag gttttactac tccgtttaac ttttcaaagt gatcaagtgt atttacgtta 1680
92 agtgcctatg tcttcaattc aggcaatgaa gtttatatag atcgaattga atttgttccg 1740
94 gca 1743
97 <210> SEQ ID NO: 2
98 <211> LENGTH: 1743
99 <212> TYPE: DNA
100 <213> ORGANISM: Artificial sequence
102 <220> FEATURE:
103 <223> OTHER INFORMATION: Native Blk HD-1 nucleotide sequence encoding Btk HD-1 toxin
104 protein (Cry1Ab) from amino acid 29-607 as described in Example 1
105 & set forth in the upper line of Figure 2, & includes synthetic
106 sequence encoding N-terminal Met-Ala
108 <400> SEQUENCE: 2
109 atggctatag aaactgggta caccccaatc gatatttctt tgtcgtaac gcaatttctt 60
111 ttgagtgaat ttgttcccg tgcgtgattt gtgttaggac tagttgatat aatatgggga 120
113 attttttggtc cctctcaatg ggacgcattt cttgtacaaa ttgaacagtt aattaaccaa 180
115 agaatagaag aattcgctag gaaccaagcc atttctagat tagaaggact aagcaatctt 240
117 tatcaaattt acgcagaatc ttttagagag tgggaagcag atcctactaa tccagcatta 300
119 agagaagaga tgcgtattca attcaatgac atgaacagtg cccttacaac cgctatttct 360
121 ctttttgcag ttcaaaatta tcaagtttct cttttatcag tatatgttca agctgcaaat 420
123 ttacatttat cagttttgag agatgtttca gtgtttggac aaaggtgggg atttgatgcc 480
125 ggcactatca atagtcgtta taatgattta actaggctta ttggcaacta tacagatcat 540
127 gctgtacgct ggtacaatac gggattagag cgtgtatggg gaccggattc tagagattgg 600
129 ataagatata atcaatttag aagagaatta acactaactg tattagatat cgtttctcta 660
131 tttccgaact atgatagtag aacgtatcca attcgaacag tttcccaatt aacaagagaa 720
133 atttatacaa acccagtatt agaaaatttt gatggtagtt ttcgaggctc ggctcagggc 780
135 atagaaggaa gtattaggag tccacatttg atggatatac ttaatagtat aaccatctat 840
137 acggatgctc atagaggaga atattattgg tcagggcatc aaataatggc ttctctgtta 900
139 gggttttcgg ggccagaatt cacttttccg ctatatggaa ctatgggaaa tgcagctcca 960
141 caacaacgta ttgttgctca actaggtcag ggcgtgtata gaacattatc gtccacctta 1020
143 tatagaagac cttttaatat agggataaat aatcaacaac tatctgttct tgacgggaca 1080
145 gaatttgctt atgggaacct ctcaaatttg ccatccgctg tatacagaaa aagcggaaacg 1140
147 gtagattcgc tggatgaaat accgccacag aataacaacg tgccacctag gcaaggattt 1200
149 agtcatcgat taagccatgt ttcaatgttt cgttcaggct ttagtaatag tagtgtaagt 1260
151 ataataagag ctctatggtt ctcttgata catcgtagt ctgaatttaa taatataatt 1320
153 ccttcatcac aaattacaca aataccttta acaaaatcta ctaatcttgg ctctggaact 1380
155 tctgtcgta aaggaccagg atttacagga ggagatattc ttcgaagaac ttcacctggc 1440
157 cagatttcaa ccttaagagt aaatattact gcaccattat cacaaagata tcgggtaaga 1500
159 attcgctacg cttctaccac aaatttaca ttccatacat caattgacgg aagacctatt 1560
161 aatcagggga atttttcagc aactatgagt agtgggagta atttacagtc cggaagcttt 1620
163 aggactgtag gttttactac tccgtttaac ttttcaaagt gatcaagtgt atttacgtta 1680
165 agtgcctatg tcttcaattc aggcaatgaa gtttatatag atcgaattga atttgttccg 1740
167 gca 1743

```

RAW SEQUENCE LISTING

DATE: 10/27/2006

PATENT APPLICATION: US/08/434,105

TIME: 10:10:14

Input Set : A:\41785.txt

Output Set: N:\CRF4\10272006\H434105.raw

170 <210> SEQ ID NO: 3

171 <211> LENGTH: 1845

172 <212> TYPE: DNA

173 <213> ORGANISM: Artificial sequence

175 <220> FEATURE:

176 <223> OTHER INFORMATION: Synthetic sequence encoding Btk HD-1 insecticidal toxin protein

177 (Cry1Ab), described in Example 2, and set forth in the lower line of

178 Figure 3

180 <400> SEQUENCE: 3

```

181 atggacaaca acccaaacat caacgaatgc attccatata actgcttgag taaccagaa      60
183 gttgaagtac ttggtggaga acgcattgaa accggttaca ctcccatcga catctccttg      120
185 tccttgacac agtttctgct cagcgagttc gtgccagggtg ctgggttcgt tctcggacta      180
187 gttgacatca tctgggggtat ctttggtcca tctcaatggg atgcattcct ggtgcaaatt      240
189 gagcagttga tcaaccagag gatcgaagag ttccgccagga accaggccat ctctaggttg      300
191 gaaggattga gcaatctcta ccaaacttat gcagagagct tcagagagtg ggaagccgat      360
193 cctactaacc cagctctccg cgaggaaatg cgtattcaat tcaacgacat gaacagcgcc      420
195 ttgaccacag ctatcccatt gttcgcagtc cagaactacc aagttcctct cttgtccgtg      480
197 tacgttcaag cagctaattct tcacctcagc gtgcttcgag acgttagcgt gtttgggcaa      540
199 aggtggggat tcatgctgc aaccatcaat agccgttaca acgaccttac taggctgatt      600
201 ggaaactaca ccgaccacgc tgttcgttgg tacaacactg gcttggagcg tgtctggggg      660
203 cctgattcta gagattggat tagatacaac cagttcagga gagaattgac cctcacagtt      720
205 ttggacattg tgtctctctt cccgaactat gactccagaa cctaccctat ccgtacagtg      780
207 tcccaactta ccagagaaat ctatactaac ccagttcttg agaacttcga cggtagcttc      840
209 cgtggttctg cccaaggtat cgaaggctcc atcaggagcc cacacttgat ggacatcttg      900
211 aacagcataa ctatctacac cgatgctcac agaggagagt attactggtc tggacaccag      960
213 atcatggcct ctccagtttg attcagcggg cccgagttta cctttcctct ctatggaact      1020
215 atgggaaacg ccgctccaca acaacgtatc gttgctcaac taggtcaggg tgtctacaga      1080
217 accttgtctt ccaccttgta cagaagaccc ttcaatatcg gtatcaacaa ccagcaactt      1140
219 tccgttcttg acggaacaga gttcgcctat ggaacctctt ctaacttgcc atccgctgtt      1200
221 tacagaaaga gcggaaccgt tgattccttg gacgaaatcc caccacagaa caacaatgtg      1260
223 ccaccaggcc aaggattctc ccacaggttg agccacgtgt ccattgttcg ttccggattc      1320
225 agcaacagtt ccgtgagcat catcagagct cctatgttct catggattca tcgtagtgtc      1380
227 gagttcaaca atatcattcc ttctctcaa atcaccctaa tccattgac caagtctact      1440
229 aaccttggat ctggaacttc tgcgtgaaa ggaccaggct tcacaggagg tgatattctt      1500
231 agaagaactt ctcttgcca gattagcacc ctcagagtta acatcactgc accactttct      1560
233 caagatatac gtgtcaggat tcgttacgca tctaccata acttgcaatt ccacacctcc      1620
235 atcgacggaa ggcctatcaa tcagggtaac ttctccgcaa ccatgtcaag cggcagcaac      1680
237 ttgcaatccg gcagcttcag aaccgtcggg ttactactc ctttcaactt ctctaacgga      1740
239 tcaagcgttt tcacccttag cgtcatgtg ttcaattctg gcaatgaagt gtacattgac      1800
241 cgtattgagt ttgtgctgc cgaagttacc ttcgaggctg agtac      1845

```

244 <210> SEQ ID NO: 4

245 <211> LENGTH: 1845

246 <212> TYPE: DNA

247 <213> ORGANISM: Artificial sequence

249 <220> FEATURE:

250 <223> OTHER INFORMATION: Native Btk HD1 nucleotide sequence encoding Btk HD-1 insecticidal

251 toxin protein (Cry1Ab), described in Example 2, and set forth in

252 the upper line of Figure 3

254 <400> SEQUENCE: 4

RAW SEQUENCE LISTING

DATE: 10/27/2006

PATENT APPLICATION: US/08/434,105

TIME: 10:10:14

Input Set : A:\41785.txt

Output Set: N:\CRF4\10272006\H434105.raw

```

255 atggataaca atccgaacat caatgaatgc attccttata attgtttaag taaccctgaa      60
257 gtagaagtat taggtggaga aagaatagaa actggttaca ccccaatcga tatttccttg      120
259 tcgctaacgc aatttctttt gagtgaattt gttcccggtg ctggatttgt gttaggacta      180
261 gttgatataa tatggggaat ttttggtccc tctcaatggg acgcatttct tgtacaaatt      240
263 gaacagttaa ttaaccaaag aatagaagaa ttcgctagga accaagccat ttctagatta      300
265 gaaggactaa gcaatcttta tcaaattttac gcagaatctt ttagagagtg ggaagcagat      360
267 cctactaatc cagcattaag agaagagatg cgtattcaat tcaatgacat gaacagtgc      420
269 cttacaaccg ctattcctct ttttgcagtt caaaattatc aagttcctct tttatcagta      480
271 tatgttcaag ctgcaaatat acatttatca gttttgagag atgtttcagt gtttggacaa      540
273 aggtggggat ttgatgccgc gactatcaat agtcgttata atgatttaac taggcttatt      600
275 ggcaactata cagatcatgc tgtacgctgg tacaatacgg gattagagcg tgtatgggga      660
277 cgggattcta gagattggat aagatataat caatttagaa gagaattaac actaactgta      720
279 ttagatatcg tttctctatt tccgaactat gatagtagaa cgtatccaat tccaacagtt      780
281 tcccaattaa caagagaaat ttatacaaac ccagtattag aaaattttga tggtagtttt      840
283 cgaggctcgg ctccagggcat agaaggaagt attaggagtc cacatttgat ggatatactt      900
285 aatagtataa ccatctatac ggatgctcat agaggagaat attattggtc agggcatcaa      960
287 ataatggctt ctctgttagg gttttcgggg ccagaattca cttttccgct atatggaact     1020
289 atgggaaatg cagctccaca acaacgtatt gttgctcaac taggtcaggg cgtgtataga     1080
291 acattatcgt ccaccttata tagaagacct tttaatatag ggataaataa tcaacaacta     1140
293 tctgttcttg acgggacaga atttgcttat ggaacctcct caaatttgcc atccgctgta     1200
295 tacagaaaaa gcggaacggg agattcgtcg gatgaatac cgccacagaa taacaacgtg     1260
297 ccacctaggg aaggatttag tcatcgatta agccatgttt caatgtttcg ttcaggcttt     1320
299 agtaatagta gtgtaagtat aataagagct cctatgttct cttggataca tcgtagtgtt     1380
301 gaatttaata atataattcc ttcatacaaa attacacaaa tacctttaac aaaatctact     1440
303 aatcttggct ctggaacttc tgtcgttaaa ggaccaggat ttacaggagg agatattctt     1500
305 cgaagaactt cacctggcca gatttcaacc ttaagagtaa atattactgc accattatca     1560
307 caaagatata gggtaagaat tcgctacgct tctaccacaa atttacaatt ccatacatca     1620
309 attgacggaa gacctattaa tcaggggaat ttttcagcaa ctatgagtag tgggagtaat     1680
311 ttacagtccg gaagcttttag gactgtaggt tttactactc cgtttaactt ttcaaattga     1740
313 tcaagtgtat ttacgttaag tgctcatgtc ttcaattcag gcaatgaagt ttatatagat     1800
315 cgaattgaat ttgttcgggc agaagtaacc tttgaggcag aatat                                     1845

```

318 <210> SEQ ID NO: 5

319 <211> LENGTH: 1921

320 <212> TYPE: DNA

321 <213> ORGANISM: Artificial sequence

322 <220> FEATURE:

323 <223> OTHER INFORMATION: Synthetic hybrid of first 1360 bases synthetic HD-1 linked

to

325 modified HD-73 sequence, described in paragraph bridging pages 53-
326 54, and as set forth in the lower line of Figure 4

328 <400> SEQUENCE: 5

```

329 atggacaaca acccaaacat caacgaatgc attccataca actgcttgag taaccagaa      60
331 gttgaagtac ttggtggaga acgcattgaa accggttaca ctcccatcga catctccttg      120
333 tctttgacac agtttctgct cagcgagttc gtgccagggtg ctgggttcgt tctcggacta      180
335 gttgacatca tctgggggat ctttggtcca tctcaatggg atgcattcct ggtgcaaatt      240
337 gagcagttga tcaaccagag gatcgaagag ttcgccagga accaggccat ctctaggttg      300
339 gaaggattga gcaatctcta ccaaattctat gcagagagct tcagagagtg ggaagccgat      360
341 cctactaacc cagctctccg cgaggaaatg cgtattcaat tcaacgacat gaacagcgcc      420
343 ttgaccacag ctatcccatt gttcgcagtc cagaactacc aagttcctct cttgtccgtg      480
345 tacgttcaag cagctaattc tcacctcagc gtgcttcgag acgttagcgt gtttgggcaa      540

```

RAW SEQUENCE LISTING

DATE: 10/27/2006

PATENT APPLICATION: US/08/434,105

TIME: 10:10:14

Input Set : A:\41785.txt

Output Set: N:\CRF4\10272006\H434105.raw

```

347 aggtggggat tcatgctgc aaccatcaat agccgttaca acgaccttac taggctgatt      600
349 ggaaactaca ccgaccacgc tgttcgttgg tacaacactg gcttggagcg tgtctggggg      660
351 cctgattcta gagattggat tagatacaac cagttcagga gagaattgac cctcacagtt      720
353 ttggacattg tgtctctctt cccgaactat gactccagaa cctaccctat ccgtacagtg      780
355 tcccaactta ccagagaaat ctatactaac ccagttcttg agaacttcga cggtagcttc      840
357 cgtggttctg cccaaggat cgaaggctcc atcaggagcc cacacttgat ggacatcttg      900
359 aacagcataa ctatctacac cgatgctcac agaggagagt attactggtc tggacaccag      960
361 atcatggcct ctccagttgg attcagcggg cccgagttta cctttcctct ctatggaact     1020
363 atgggaaacg ccgctccaca acaacgtatc gttgctcaac taggtcaggg tgtctacaga     1080
365 accttgtctt ccaccttgta cagaagaccc ttcaatatcg gtatcaacaa ccagcaactt     1140
367 tccgttcttg acggaacaga gttcgctat ggaacctctt ctaacttgcc atccgctgtt     1200
369 tacagaaaga gcggaaccgt tgattccttg gacgaaatcc caaccacagaa caacaatgtg     1260
371 ccaccaggc aaggattctc ccacaggttg agccacgtgt ccatgttccg ttccggattc     1320
373 agcaacagtt ccgtgagcat catcagagct cctatgttct cttggatata ccgtagtgtt     1380
375 gagttcaaca acatcatcgc atccgatagt attactcaa tccctgcagt gaagggaaac     1440
377 tttctcttca acggttctgt catttcagga ccaggattca ctgggtggaga cctcgtaga     1500
379 ctcaacagca gtggaaataa cattcagaat agagggtata ttgaagtcc aattcacttc     1560
381 ccattccacat ctaccagata tagagttcgt gtgaggtatg cttctgtgac cctattcac     1620
383 ctcaacgtta attggggtta ttcattccatc ttctccata cagttccagc tacagctacc     1680
385 tctttggata atctccaatc cagcgatttc ggttactttg aaagtgccaa tgcttttaca     1740
387 tcttactcg gtaacatcgt ggggtttaga aactttagtg ggactgcagg agtgattatc     1800
389 gacagattcg agttcattcc agttactgca acactcgagg ctgaatataa tctggaaaga     1860
391 ggcgagaagg cggtaatgcg ctgtttacgt ctacaaacca gcttggactc aagacaaatg     1920
393 g                                                                                   1921

```

396 <210> SEQ ID NO: 6

397 <211> LENGTH: 1921

398 <212> TYPE: DNA

399 <213> ORGANISM: Artificial sequence

401 <220> FEATURE:

402 <223> OTHER INFORMATION: Native Bt nucleotide sequence encoding N-terminal 450 HD-1
(Cry1Ab)

403 amino acids and 451-615 of Bkt HD73 (Cry1Ac) described in Example 3
404 and as set forth in the upper line of Figure 4

406 <400> SEQUENCE: 6

```

407 atggataaca atccgaacat caatgaatgc attccttata attgtttaag taaccctgaa      60
409 gtagaagtat taggtggaga aagaatagaa actggttaca cccaatcga tatttccttg     120
411 tcgctaacgc aatttccttt gagtgaattt gttcccggtg ctggatttgt gttaggacta     180
413 gttgatataa tatggggaat ttttggtccc tctcaatggg acgcatttct tgtacaaatt     240
415 gaacagttaa ttaaccaaag aatagaagaa ttcgctagga accaagccat ttctagatta     300
417 gaaggactaa gcaatcttta tcaaatttac gcagaatctt ttagagagtg ggaagcagat     360
419 cttactaatc cagcattaag agaagagatg cgtattcaat tcaatgacat gaacagtgcc     420
421 cttacaaccg ctattcctct ttttgcagtt caaaattatc aagttcctct tttatcagta     480
423 tatgttcaag ctgcaaattt acatttatca gttttgagag atgtttcagt gtttggacaa     540
425 aggtggggat ttgatgccgc gactatcaat agtcgttata atgatttaac taggcttatt     600
427 ggcaactata cagatcatgc tgtacgctgg tacaatacgg gattagagcg tgtatgggga     660
429 ccgatttcta gagattggat aagatataat caatttagaa gagaattaac actaactgta     720
431 ttagatatcg tttctctatt tccgaactat gatagtagaa cgtatccaat tcgaacagtt     780
433 tcccaattaa caagagaaat ttatacaaac ccagtattag aaaattttga tggtagtttt     840
435 cgaggctcgg ctcagggcat agaaggaagt attaggagtc cacatttgat ggatatactt     900
437 aatagtataa ccatctatac ggatgctcat agaggagaat attattggtc agggcatcaa     960

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/08/434,105

DATE: 10/27/2006

TIME: 10:10:15

Input Set : A:\41785.txt

Output Set: N:\CRF4\10272006\H434105.raw

L:1914 M:220 C: Keyword misspelled or invalid format, <213> ORGANISM for SEQ ID#:23